

ANALYSIS OF GENETIC VARIATION IN UPPER WILLAMETTE RIVER BULL TROUT POPULATIONS

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ABSTRACT

Bull trout (*Salvelinus confluentus*) are currently listed as a threatened species by the U.S. Fish and Wildlife Service. The long term persistence of many bull trout populations is dependent on the availability of suitable habitat and connectivity among local populations. Within the upper Willamette River bull trout habitat has been extensively fragmented due to the construction of impassible dams and other barriers to migration (e.g. culverts). Presently four populations of bull trout persist at low numbers in the upper Willamette River. In order to supplement population declines, fry have been transferred among populations within the basin and naturally produced fry have been taken to a fish hatchery for rearing before being released back into the upper Willamette. To date it is unclear what effect these management actions have had on long term population persistence and levels of genetic variation within the basin. In this project we will use genetic markers to determine how genetic variation is partitioned within the Willamette River system and to determine the effects that past management practices have had on levels of genetic variation. Our project has four main objectives: 1) To determine the levels of genetic variation within and among bull trout populations in the upper Willamette system 2) To determine the genetic risks and benefits associated with transporting individuals among populations 3) To determine which populations within the upper Willamette system are the most appropriate source populations for translocations of individuals and 4) To determine if the levels of genetic variation in the individuals reared in a fish hatchery are characteristic of individuals in the wild source population. This information will be critical for guiding bull trout conservation and management activities in the upper Willamette River system. Genetic information from this project will form the basis of a genetic management plan for bull trout in the upper Willamette River.